

NDIA SEABASING STUDY

LOGISTICS SECTION

Paul Bishop
Co-Director for Logistics

Tasking

- **Terms of Reference (TOR)**
 - Sets study requirements
 - Signed by Dr. Skinner (LWS-PAD) and Gen Jenkins (NDIA Expeditionary Warfare Division Chairman)
- ***Identify commercial technologies that hold promise for bridging Seabasing Gaps***
- ***Provide insights into demand for technologies***

Joint Concepts

- **Seabasing Joint Integrating Concept**
 - Range of Military Operations
 - 2015 to 2025 timeframe
 - ***Near Simultaneous Operations***
 - ***Major Combat Operation (MCO)***
 - ***Humanitarian Assistance (HA)***
 - ***Counter-Insurgency Operation (COIN)***
- **Focused Logistics Joint Functional Concept**
 - Joint and Fully Integrated
 - **Logistics Transformation**
 - **Improve Technology**
 - **Innovations to Processes, Systems & Organizations**
 - **Commercial Best Practices**

Study Team

**Vice Admiral James Amerault, USN
(Ret)
ALION-JJMA**

STUDY DIRECTOR

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Logistics Team



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SEABASING: LOGISTICS GAPS

a study for the
LITTORAL WARFARE SYSTEMS
PRODUCT AREA DIRECTOR

2005



Skip



Dennis
Gilhooley
IBM

Stretch

BAE SYSTEMS

Other
Supporting
Team
Members

- **Major Planned Industrial Facility**
 - Inter & Intramodal Transportation Hub
 - Warehouse & Distribution Facility
 - Fuel Terminal
 - Hospital
 - Repair Facility
 - Desalinization Plant
 - Pipelines
 - Hotels and Houses
- **All tied together with extensive enterprise software & communications**
- ***And all at sea!***

Distribution Facility



Seabasing Capability Gaps

GAP	TITLE
1	Interface Between Large and Small Vessels
2	Interface Between Large Vessels
3	Heavy Lift Surface Containers
4	Sea Base Capable, Heavy Lift Vertical Connector
5	Automated and Integrated Warehousing
6	Distributed, Collaborative Operational Logistics Planning
7	Total Asset Visibility
8	Advanced Simulators for Rehearsal
9	Cargo Transfer at Sea
10	Ships of Appropriate Design
11	Joint Logistics Support System
12	Sea State 4 Intra-Theater Lift
* 13	<i>Shared Communication Architecture</i>
14	Decontamination for Reconstitution of Forces
* 15	<i>On-Station Reload of NSFS Assets</i>
16	Sea-Based Maintenance
* 17	<i>Bulk Liquid Handling & Transfer</i>
18	Sea-Based Medical

Logistics Gaps

CAPABILITY GAPS ASSIGNED TO LOGISTICS GROUP	
5A	Selective Offload/Onload
5B	Material Handling Strike Up/ Strike Down (SUSD)
5C	Modular Packaging/Repackaging En Route
6	Distributed, Collaborative Operational Logistics Planning
7	Total Asset Visibility
11	Joint Logistics Support System
16	Sea-Based Maintenance
18	Sea-Based Medical
LOGISTICS GROUP INTEREST	
13	Shared Communications Architecture
15	On-Station Reload of NSFS Assets
17	Bulk Liquid Handling and Transfer

Today's Briefing

- **Two Gaps**
 - Gap 5 Warehousing
 - Gap 7 Total Asset Visibility
- **Gap Discussion**
 - Capability required
 - Commercial technologies
 - Spectrum of solutions
 - Examples
- **Observations & Conclusions**
 - Recommendations
 - Box Score

Gap 5 - Warehousing

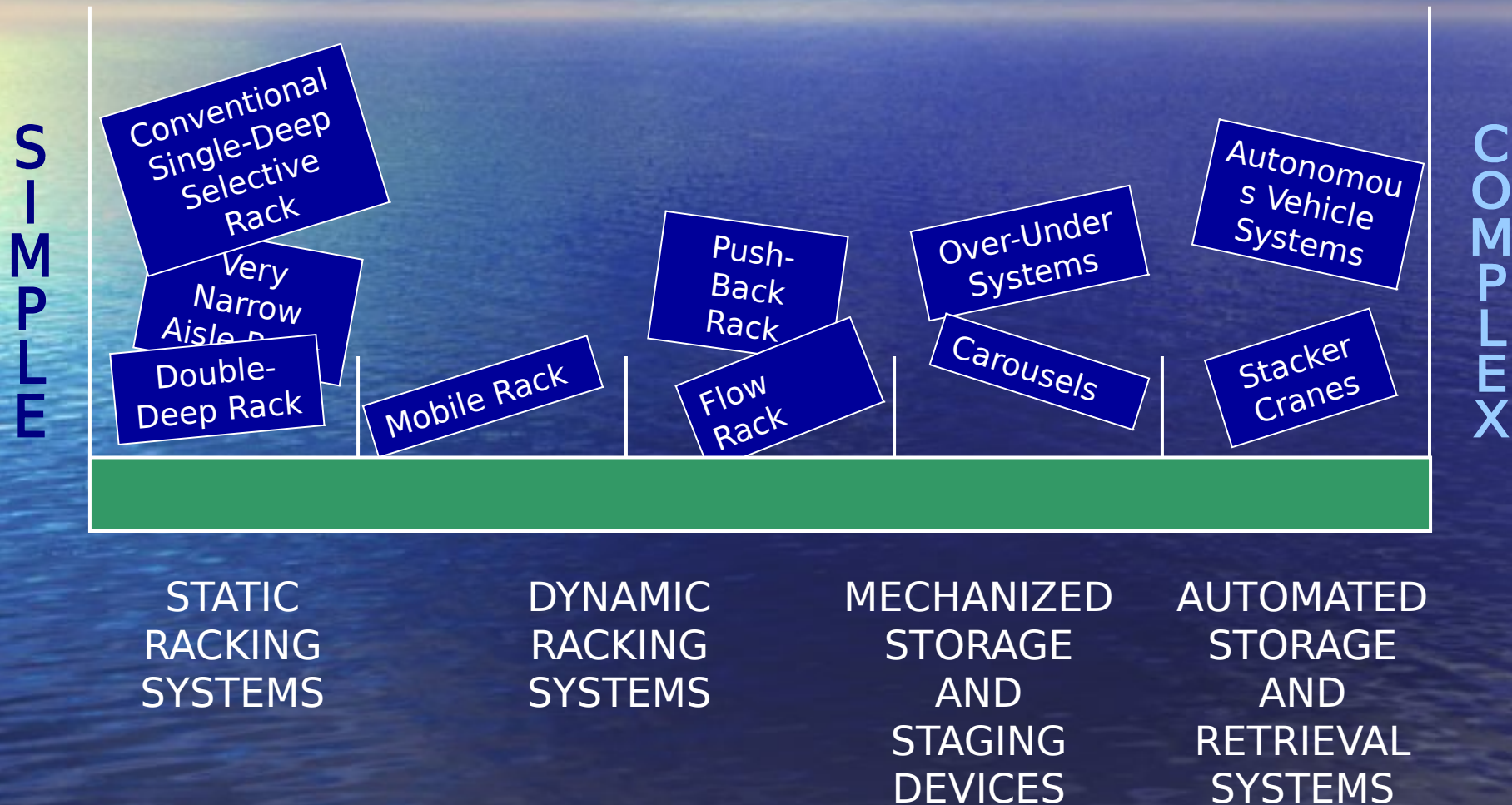
- **Need**
 - **Automated & integrated warehousing** is a major function of Seabasing
- **Subgaps**
 - 5A Selective offload/onload (**selective access**)
 - 5B **Strike up/Strike down**
 - 5C Modular **packaging/repackaging enroute**

5A - Selective Offload/Onload

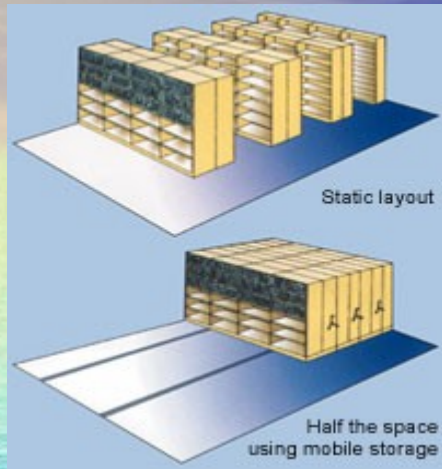
- **Capability Required**
 - **Selective access** for ordnance, vehicles, and stores
- **Spectrum**
 - Warehouse items – not containers
 - Case of toilet paper or specific repair part
 - Vehicles, gun barrels, ammunition
- **Package Size**
 - Small maintenance part
 - Case goods
 - Specialized Container

Gap 5A - Selective Offload/Onload

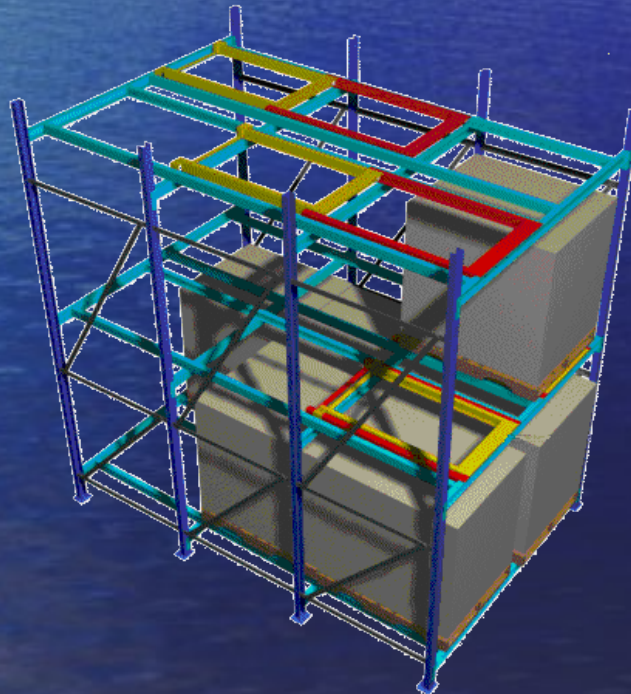
(Selective Access)



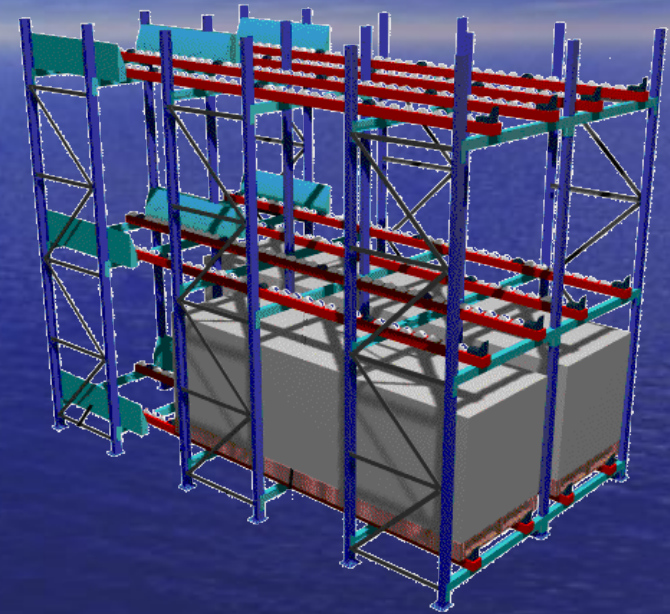
Static and Dynamic Racking Systems



**MOBILE RACK
OPERATING CONCEPT**

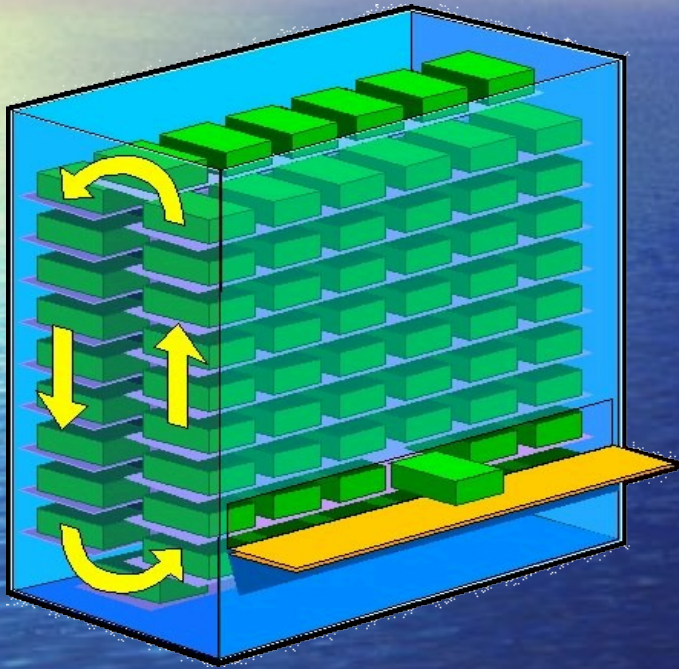


PUSH-BACK RACK

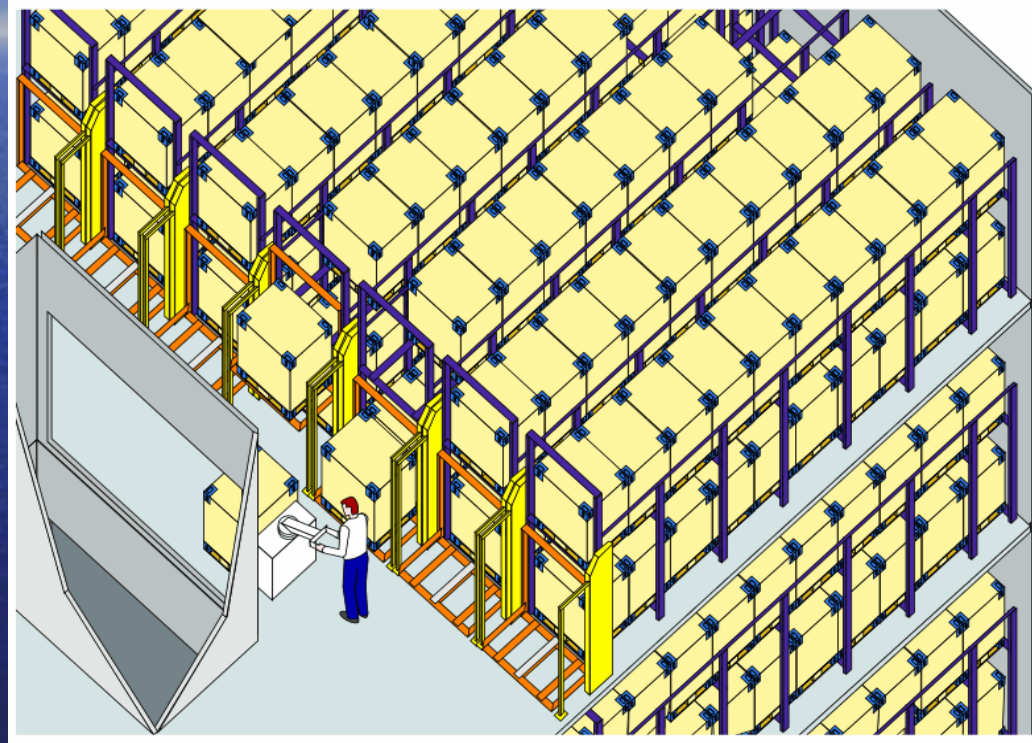


PALLET FLOW RACK

Mechanized Storage and Staging Devices



VERTICAL CAROUSEL



**ARTIST'S CONCEPTION OF HOLD SPACES
CONTAINING OVER/UNDER MACHINES**

Automated Storage and Retrieval Systems



AS/RS MACHINE



**RETROTECH ACCESS SYSTEM
AUTONOMOUS VEHICLE**

5B - Material Handling Strike Up/Strike Down

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CONVENTIONAL
VEHICLES AND
CONVEYORS

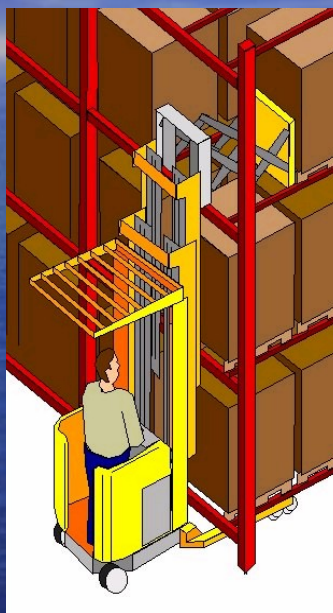
ADVANCED
VEHICLES
AND
CONVEYORS

AUTONOMOUS
SYSTEMS AND
PALLETIZERS

Conventional Vehicles and Conveyors



**SWINGMAST
TRUCK**



REACH TRUCK



**WALKIE
STACKER**



**TURRET
TRUCK**

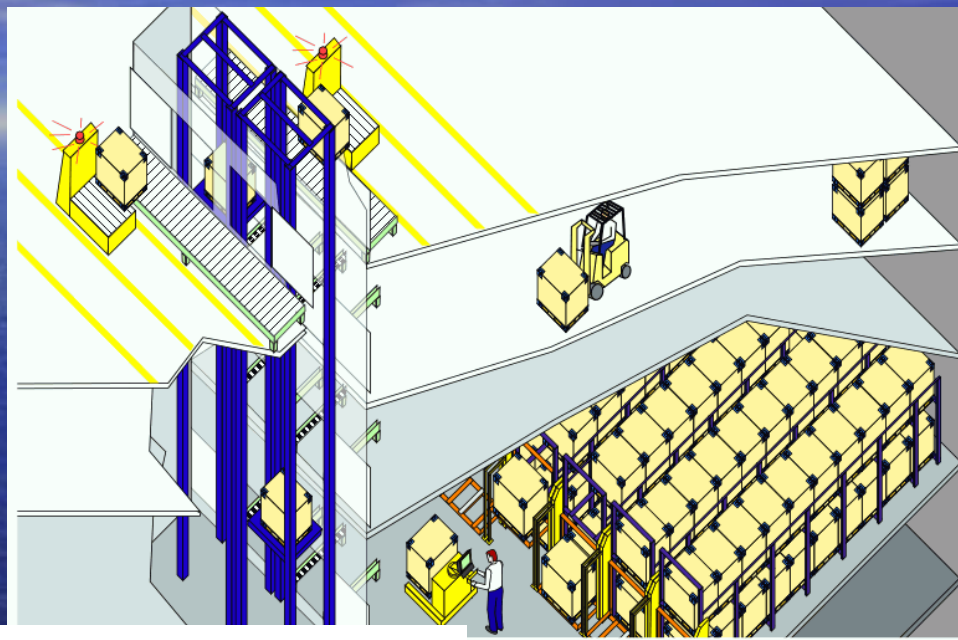
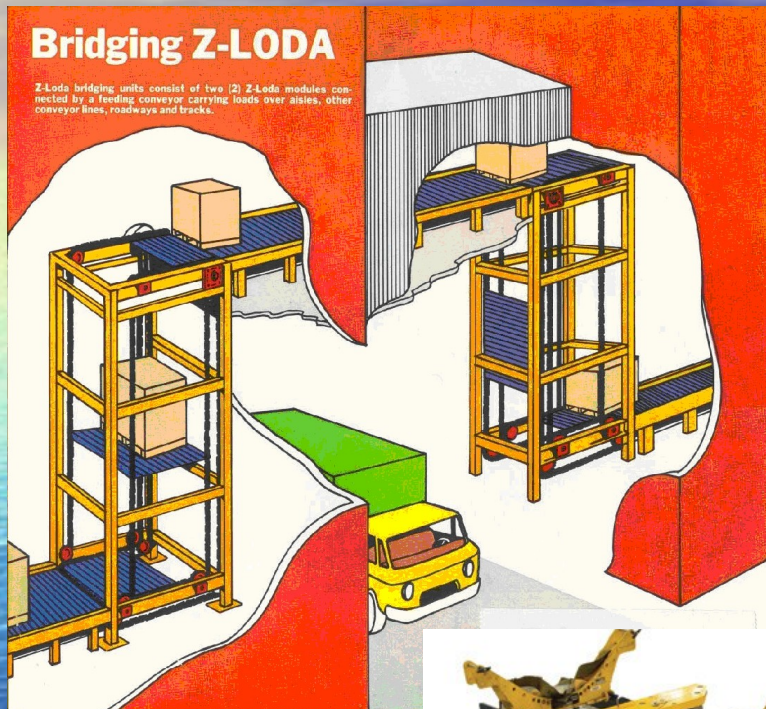


**LIVE ROLLER
CONVEYOR**

Advanced Vehicles and Conveyors

Bridging Z-LODA

Z-Loda bridging units consist of two (2) Z-Loda modules connected by a feeding conveyor carrying loads over aisles, other conveyor lines, roadways and tracks.



CONTINUOUS VERTICAL CONVEYORS



RECIPROCATING VERTICAL CONVEYORS

AIRTRAX OMNI VEHICLE

7 - Total Asset Visibility

- **Joint Total Asset Visibility**
 - Defense Departments Automated Information Capability for Tracking Equipment, Personnel, and Supplies.
- **Definition**
 - JTAV Is the capability to provide users with **timely and accurate information on the location, movement, status, and identity of units, personnel, equipment, and supplies.**
 - Facilitates the capability to act upon that information to improve overall performance of DoD's logistics practices.

7 - Total Asset Visibility

(Enterprise-Wide Awareness)

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MANUAL
METHODS

INTEGRATED
SYSTEMS

FULLY
AUTOMATED
SYSTEMS

Observations

- **Joint and Fully Integrated Logistics**
 - Will include commercial entities
 - **FedEx - UPS - DHL etc.**
 - **Vendors**
 - **Contractors**
- **Commercial Facilities are Typically Large and Automated**
 - Focus
 - **Throughput**
 - **Enterprise Connectivity**
 - **Vendor, enterprise, shipper, customer interaction**

More Observations

- **Ordinance**

- Most requirements seen today include ordnance handling as a requirement – is this really what is desired?
- Requirements should be tailored for what is anticipated e.g. maintenance parts, consumables etc.

- **Resource Sponsorship**

- No single resource sponsor responsible for integrating seabasing architecture

Terms & Usage

- **Some terms are not fully defined**
- **Selectivity**
 - **100% Selectivity** - Directly access any load
 - **Selective** - Access after move
 - **Type Selective** - Direct access one load of any type
- **Aging and Spoilage**
 - **Non-perishable items** (canned peas)
 - **Time-sensitive items** (batteries)
 - **Perishable items** (vegetables)

Recommendations

- **C4I**
 - Look at Logistics Command and Control in an integrated manner – ***domain expertise is an issue***
 - Establish separate logistics and medical networks LOGNET & MEDNET
- **Commercial Entities & Practices**
 - Incorporate commercial logistics capability throughout the Sea Base
 - Always interface with commercial systems
 - ***Seek domain expertise from commercial sector***

Logistics Gaps Box Score

CAPABILITY GAPS ASSIGNED TO LOGISTICS GROUP	
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11	Joint Logistics Support System
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LOGISTICS GROUP INTEREST	
13	Shared Communications Architecture
15	On-Station Reload or NSFS Assets
17	Bulk Liquid Handling and Transfer

Conclusions

- **Technology** used in industry can be of high value but significant issues may arise
 - Motion & Flexing
 - Hull constraints
 - Marinization
- **Architectures** should be developed that will satisfy user needs and resource realism
 - Seabase
 - Logistics Systems
- **The architecture chosen will drive the solutions**

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